DOCUMENT RESUME

ED 298 907 IR 013 292

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TITLE Frame Games and Game Chains: A Technology for Interactive Teaching/Learning.
PUB DATE 84
NOTE 13p.; In: Instructional Development: The State of the Art, II; see IR 013 273. For volume I, see ED 292 444.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Students; *Educational Games; Higher Education; *Instructional Development; *Learning Activities; Needs Assessment; *Sequential Approach; *Simulation
IDENTIFIERS *Interactive Teaching

ABSTRACT

This chapter presents two significant gaming concepts, one old and one new, and demonstrates how interactive teaching/learning situations can be structured through their application to attain prespecified objectives which require communication, group decision making, planning, or simple interactive skills. Frame games, the older concept, are defined, and the newer concept of the game chain is introduced. Examples of both types of games are provided and suggestions are made for ways to fit these types of games together to build highly effective interactive learning sessions. It is noted that a frame game is a design that provides a framework for creating contrived learning activities involving conflict, a set of rules for players' moves, and termination criteria so that winners may be determined. The well known card game, "Concentration," is presented and adapted to generate instructional games. Another form of frame game--a "needs analysis" game--and an adaptation of this framework--"The Policy Council Game"--are also presented. The second concept presented is "game chains," or the sequencing of games that are interrelated so that the output of one game becomes the input or starting point for another game. Two examples of the incorporation of frame games into the game chain concept are also provided, i.e., "Community Radio" and "Future Forecasting." Seven figures are provided. (15 references) (EW)

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Chapter 19

Frame Games and Game Chains: A Technology for Interactive Teaching/Learning

Harold D. Stolovitch

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Instructional development activities result in many forms of instruction. Some of these varied forms show great similarity, yet IDers are constantly "reinventing" these very similar forms. This chapter presents two basic forms of interactive teaching/learning which individually and in combination can be used by developers at many levels to help learners obtain objectives which require communication, group decision making, team planning, or simple interactive skills—and "reinvention" is not required.

INTRODUCTION

This chapter presents two significant gaming concepts, one old and one new, and attempts to demonstrate how through their application interactive teaching/learning situations can be structured to help attain prespecified objectives. major concerns of the chapter are, first, to maximize learner inputs and activity in the instructional process, and second, to place the responsibility for learning squarely on learners' shoulders. Interaction in this context, therefore, is viewed as something which should primarily occur among learners. The instructor, teacher or trainer has the prime responsibility for designing the interactive learning situation and managing the learning process. Occasionally s/he or a subject-matter expert takes a leading role in the interaction itself, but only as a natural and integral part of the overall design.

This chapter begins with a definition of "frame-games," a concept already well-documented in the game literature. (For a more in-depth explanation, definition and examples of frame-games see Horn, 1974; Stolovitch, 1978; Thiagarajan and Stolovitch, 1979; Thiagarajan and Stolovitch, 1978). It then introduces a newer concept, game-chains, which has appeared in related forms elsewhaere, but is a relatively innovative procedure in terms of game design. Examples of both frame-games and game-chains are provided, along with suggestions as to how these can be fit together in order to build highly effective interactive teaching/learning sessions.

FRAME GAMES

In the instructional setting, Stolovitch and Thiagarajan (1980) define the frame-game as follows:

> ... a design that provides a framework for creating contrived learning activities involving conflict, a set of rules for player moves, and termination criteria so that winners may be determined. This framework is easily adaptable to a wide variety of objectives and content.

All games can be broken down into two major components: structure and content. Any game which exists, therefore, initially possesses frame-game potential. The game must be carefully

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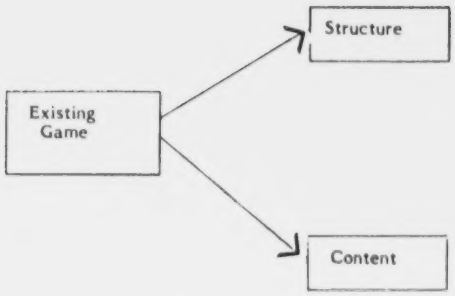

Figure 19-1.

analyzed to dissociate structure from content (Figure 19-1).

In gaming terms, we say that we "unload" the game of its content in order to expose its underlying structure. This structure, clearly defined and analyzed, becomes a "frame." The game or instructional designer then introduces a new content together with its pre-specified objectives, and "loads" it onto the exposed frame, thus creating a new, and for the targeted learner-group, instructionally-relevant game (see Figure 19-2).

Usually, some adjustment to the frame must be made in order to achieve a completely comfortable fit between content and frame. The degree of flexibility and adaptability of the underlying structure makes a game more or less suitable as a frame-game.

The process of adapting new games from old frames is one which many educators and trainers frequently use. Essentially, the frame-game approach to game design is based upon the principle, "if it works well in one setting then it should work in another, if suitably altered." Success with this approach has been documented (e.g., Tymitz, 1979). The author of this chapter has assisted hundreds of teachers and trainers in designing games to meet their own special instructional needs. With few exceptions, most of the games so produced have been successful with the intended learners.

At this point, perhaps, an example of the frame-game adaptation process using a simple, well-known game might best demonstrate how frame-games can rapidly generate new instructional games. Below is an example drawn from Stolovitch and Thiagarajan (1980). It describes the popular game of CONCENTRATION and shows how the structure can be exposed to reveal the underlying frame. It then illustrates how the frame can be loaded with (and adjusted to) two new and different sets of content, thus generating two new games.

CONCENTRATION

CONCENTRATION is a popular card game with many variations. Basically, the ordinary 52-playing-card deck plus two jokers is shuffled and

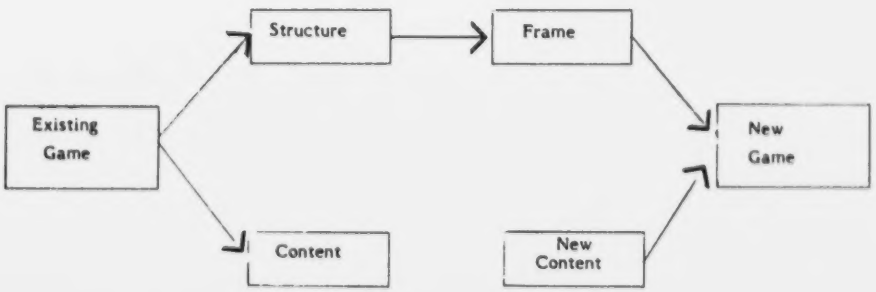

Figure 19-2.

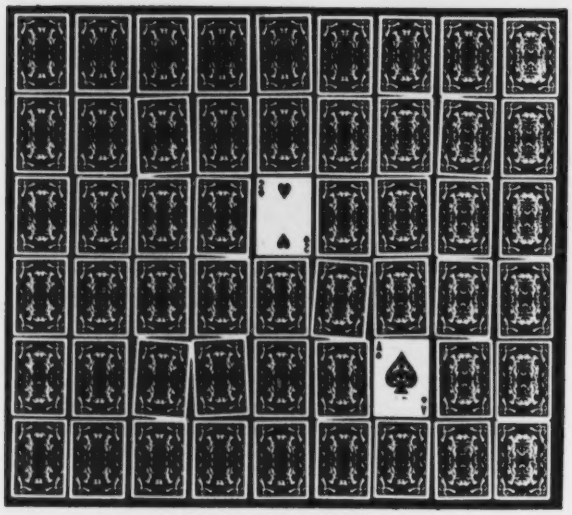

Figure 19-3. CONCENTRATION

then laid out, face down, in rows. Players take turns turning over cards two at a time, as illustrated in Figure 19-3. If they match--i.e., have the same value--the player turning the cards over keeps them and gets another turn. Players concentrate on the locations of different cards, since all unmatched cards are turned face down again. The game ends when all cards have been collected. The winner is the player who collects the most cards.

Removing the content form the game, we see that the concentration frame operates as follows:

1. Stimulus elements are randomly laid out with the faces hidden.
2. Players reveal two elements at a time.
3. Elements which form a pair are retained by the player. Elements which do not form a pair are turned face down.
4. Players take turns, unless a pair is revealed. A player uncovering a pair receives an extra turn.
5. Pairs are removed until no more elements remain.
6. Player with the highest number of pairs wins.

The CONCENTRATION frame is graphically depicted in Figure 19-4.

Here are two adaptations (new games) based upon the CONCENTRATION Frame.

Adaptation 1. WEATHER WATCH

Players: Amateur sailors taking a course on weather
Objective: Discriminate among various cloud forms.
Materials:

Forty cards with uniform backs containing photographs of various cloud forms. There are four different photographs of each of the following ten cloud forms: cirrus, cirro-cumulus, cirro-stratus, altocumulus, alto-stratus, nimbo-stratus, strato-cumulus, stratus, cumulus, cumulo-nimbus.

Number of players: Two to five
Approximate time requirement: 15 to 20 minutes
Play of the game:

1. The game leader shuffles all the cards and then places them face down in rows.
2. The first player selects two cards and turns them face up so that all players can see the cloud photographs on them.
3. If the two cards match, the player names the cloud form. The game leader verifies whether or not there is a match and whether the name is correct.
4. If correct, the player retains the pair and gets another turn. If incorrect (either through mismatching or misnaming), the game leader says "no" and play passes to the next player. If there is no match, play also passes on.
5. The game continues until all pairs are removed. The player with the most cards wins.

Adaptation 2. NUMBER VALUES

Players: Pre-school/primary school children
Objective: Associate standard arabic numeral with its value.
Materials:

A standard set of dominoes (28). Thirteen flashcards each containing a number from 0 to 12.

Number of players: Two to ten
Approximate time requirement: 15 to 20 minutes
Play of the game:

1. One child lays out all 28 dominoes in random fashion face down. Another child shuffles the 13 cards and also lays them out with the numbers hidden.
2. Players turn over one domino and one card at a time. If the number of dots on the face of the domino equals the number on the card, the player keeps the domino, but turns the card back over. If there is no match, both the card and the domino are turned back over. Players get an extra chance each time they make a match.
3. The game continues until all dominoes are removed from the table. The player with the highest number of dominoes wins the game.

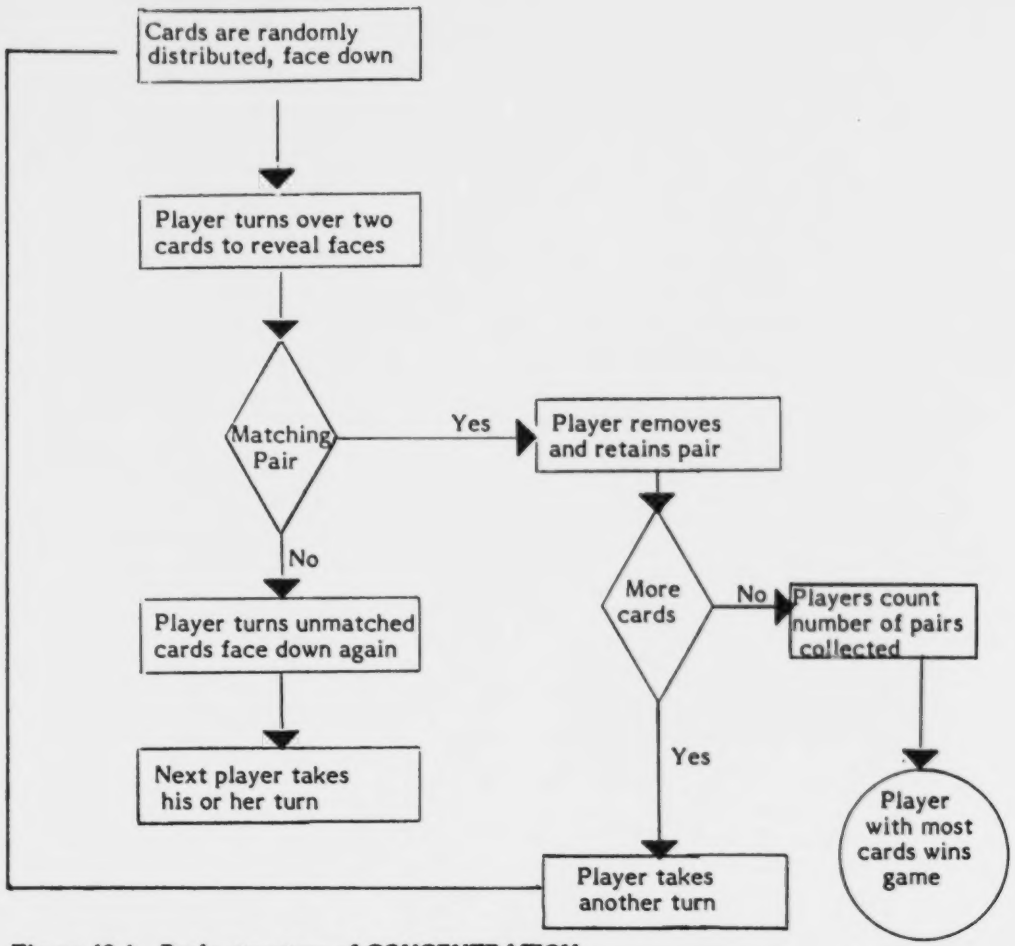
Cards are randomly distributed, face down
Player turns over two cards to reveal faces
Matching Pair
Yes
Player removes and retains pair
No
More cards
No
Players count number of pairs collected
Player turns unmatched cards face down again
Yes
Next player takes his or her turn
Player with most cards wins game
Player takes another turn

Figure 19-4. Basic structure of CONCENTRATION.

Thus far, we have examined the basic concept of frame games and have seen how the process may be applied to a simple existing game. Thiagarajan, in the late 1960s and early 1970s, began developing a series of game structures or frame games which he labelled as GAMEgames. These GAMEgames in and for themselves have never possessed a content. They have been designed specifically as frame games onto which an extremely broad variety of content can be loaded. They have been used to generate interactive teaching/learning activities on topics ranging from abortion and behavioral objectives to yoga and zoning laws. Below is an example of one of the GAMEgames, drawn from Stolovitch and Thiagarajan (1980).

NEEDS ANALYSIS GAME

This frame game is appropriate for situations in which a prioritized list of some kind is required. This game receives inputs from members of a group, and through a scoring system which rewards consensus, produces a prioritized list of needs, criteria, products, people, principles, action, steps, etc.

The basic structure of the game is shown in Figure 19-3 and is described as follows:

1. The group is divided into teams of four to six players each.
2. Each team prepares a list of policies, positions, needs (or whatever), which is appropriate to the topic.

3. Once the teams have prepared their lists, the game leader elicits one item from each team and writes it on a chalkboard or flip-chart. this process is continued until a dozen items have been placed on the board or chart.
4. Each team secretly selects the most acceptable item from the list on the board.
5. Team selections are exposed. Teams score a point for every other team selecting the selecting the same item.
6. The item which receives the most votes is ranked first and crossed off the list.
7. The game continues until a pre-specified number of items is selected.

Here, although very extended, is a description of one of the adaptations designed using the basic NEEDS ANALYSIS GAME frame.

Adaptation 1. THE POLICY COUNCIL GAME

What would it feel like to be an important member of a policy council determining matters of starvation and food, birth and death, and a host of other critical factors? Every day, different councils debate food, population, energy, and agricultural policies all over the world, from local meetings of village elders somewhere in rural Chad to large assemblies of sophisticated diplomats in the United Nations. These key decision-makers have to come up with policies in the best interests of the most people.

In the following simulation game, each team represents a member of a policy council trying to reach consensus on vital issues related to the world food problem. During the play of the game, in trying to reconcile what you feel is the best policy with what others are willing to accept, you experience some of the frustration felt by members of such councils in the real world. Your team scores high if it comes up with widely accepted solutions and also if it accepts stronger solutions from other teams.

Players: Adults interested in the world food problem

Objective: Identify five acceptable policies which can help alleviate the world food problem.

Number of players: 3 to 30. If there are five or fewer, each plays individually. With more than five, players are divided into three to six teams of approximately equal numbers.

Approximate time requirement: One to two hours.

Materials:

Paper and pencil for each team. Chalkboard or a large flip-chart for writing down the common list of policies.

Play of the game:

The following are brief descriptions of the steps in the game. Each step is illustrated by the outcomes from an actual game played by a group of adults. The steps in the game are printed in regular type while the sample game segments are indented.

1. Preliminaries. The game leader divides the players into a suitable number of teams. He or she briefly explains that the teams are about to participate in a policy-council meeting, specifies the issue upon which policies are to be set, and provides background information about the context in which the meeting takes place.

   There are 23 players and Fred, our game leader, divides them into five teams. Three teams end up with five players and the other two with four, but this does not matter. Fred explains that they are about to simulate the deliberations of the presidential advisory commission of a small developing nation in Southeast Asia. This nation has a rapidly growing population rate which is holding up their drive toward self-sufficiency in food production. The council is given the task of coming us with policies for reducing the birth rate in the country.

2. Generating individual lists. Each team prepares a list of five suggested policies in the specified areas. Members of each team collaborate with each other in this task, but no team is permitted to consult with another team.

   Fred explains what is to be done during the first phase of the game. He suggests that the team work fast because there is a ten-minute time limit for coming up with a list of policies. Here are the lists generated by different teams:

   Alan's team:

   1. Encourage national research in inexpensive and reliable contraceptive devices.
   2. Distribute birth-control pills at a subsidized rate to working women in urban areas.
   3. Strongly encourage women to undergo sterilization when they are in the hospitals to deliver their babies.
   4. Introduce lessons on the dangers of rapid population growth in the elementary and high-school curricula.
   5. Produce documentary films on the plight of large families.

Barbara's team:
1. Concentrate upon educating rural women on the advantages of having a small family.
2. Implement compulsory vasectomy of men with more than three children.
3. Improve infant health care so that babies have greater chances of living.
4. Increase job opportunities for women.
5. Deny promotion of civil servants with more than three children.

Charlie's team:
1. Make surgical sterilization of men and women freely available.
2. Deny government-subsidized housing to large families.
3. Develop a system of old age pensions so that senior citizens are not dependent upon their children.
4. Train a large army of family-planning workers to spread the message in rural areas.
5. Concentrate upon the use of the IUD loop on a large scale.

Diana's team:
1. Relax abortion law.
2. Mobilize religious opinion in favor of birth control.
3. Undertake a concentrated media blitz on birth control.
4. Offer financial incentives to parents with few children (e.g., negative income tax exemptions).
5. Supply contraceptive devices free-of-charge to poor people in villages.

Esther's team:
1. Encourage men to undergo vasectomies.
2. Widely disseminate informaiton upon contraceptive techniques.
3. Offer cash incentives to moviemakers who produce feature films about family planning.
4. Make contraceptive devices freely and widely available to anyone who needs them.
5. Discourage large families by increasing the financial burden on the parents.

3. Creating a common list. The game leader asks each team to read aloud one suggested policy from its list which s/he writes upon the chalkboard. Teams try to contribute policies which are different from those already upon the list. This procedure is continued until the common list upon the chalkboard contains ten policy suggestions.

   Alan's team starts off the common list with the first policy from their list. Fred summarizes it upon the chalkboard. Other teams take turns contributing their policies to the common list, which ends up with the following ten items.
   1. Encourage research upon contraception.
   2. Increase job opportunities for women.
   3. Wide dissemination of contraceptive information.
   4. Media propaganda blitz.
   5. Free surgical sterilization.
   6. Cheap birth control pills.
   7. Compulsory vasectomy.
   8. Old age pension.
   9. Free contraceptives.
   10. Financial burdens upon parents of large families.

4. Selecting the most acceptable policy. Each team now studies the common list and selects the one policy which it believes to be the most acceptable one to different people. The game leader secretly collects the choices of each team and announces them after all teams have decided.

   During this phase, Alan's and Esther's team chose Item 6 ("Cheap birth control pills"). Charlie's and Barbara's chose Item 3 ("Wider dissemination"), and Diana's team chose Item 5 ("Free surgical sterilization").

5. Scoring the round. The game leader computes a score for each team which equals the number of teams selecting the same policy. (This score rewards consensus).

   Scores for the team at the end of the first round are two each for Alan's, Esther's, Barbara's, and Charlie's Teams and one for Diana's team.

6. Ranking the policy. The policy which receives the most choices is crossed off the common list and

given the first rank for acceptability. If more than one policy is ranked, the players are given a brief debate period during which they elaborate upon the relative merits of their choices and try to persuade each other. Then the teams return to another round of secret selection during which they stay with their original choice or shift to a new policy.

No policy is crossed off at the end of the first round because of the tie between Items 3 and 6 with two votes each. There is a two-minute debate period during which various persuasive points are made: "People don't know anything about contraception. You've got to teach them that it is possible". "Surgery is more reliable than the pill and it is guaranteed to bring down the birth rate". During the ensuing round, Alan's team shifts to Item 2. Esther's team shifts from Item 6 to Item 3 and joins Charlie's and Barbara's. Diana's team stays with the original choice of free sterilization. this gives the following scores to the team for the second round: Barbara, Charlie, and Esther, three each; and Alan and Diana, one each.

7. Recycling. After crossing off the first-ranked policy from the common list, the game procedure is repeated for identifying the next four most-acceptable policies, one at a time. During each round, the team makes confidential choices and the game leader reveals them and announces scores. The policy which receives the most votes during each round is crossed off the common list.

   The game proceeds according to the rules for five more rounds to determine the next four acceptable policies. (One of the rounds ends in a two-way tie.) At the end of this phase, the five selected policies are:

   - Wider dissemination of contraceptive information.
   - Free surgical sterilization.
   - Financial burdens upon parents of large families.
   - Increase job opportunities for women.
   - Research upon contraception.

8. Determining the winners. The game comes to an end when the five policies have been identified. Each team adds up the score points it has accumulated during the earlier rounds of voting; the team with the highest score wins the game.

   In addition to winning the game based upon this consensus score, teams may compare their performance upon another criterion. Each team checks its original list of five policy suggestions against the top five policies identified from the common list. The team which has more of its original suggestions (or reasonable facsimiles thereof) among the top five than does any other team, is declared to be the winners by the criterion.

   Total scores for the different teams are 16 each for Alan's and Diana's, 18 for Esther's, 20 for Charlie's and 22 for Barbara's. Hence, Barbara's team is declared the winner in the consus category. Esther's original list is found to contain three policies which made the top five. Her team wins an award for this.

Variations

1. The length of this game can be shortened by reducing the number of policies. For example, you may require each team to list three policies and make a common list with six, from which the top three are selected.
2. Another way to speed up the game is do away with the first phase during which each team generates its own list. You can begin with a ready-made list of ten policies and have the teams identify the top five using the procedure in the latter phase of the game.

Suggested Alternative Topics:

- Nutritional policy in a developing nation.
- Fuel policy in a developed nation.
- International policy about weather modification.
- International policy about harvesting the seas.
- Agricultural credit policy of a federal bank in developing region.

To summarize, the frame game is not a new concept. Designers, educators, even parents have been adapting successful games to accomodate new objectives and content (or materials and media) for

centuries. (For an excellent example of this process during the eighteenth and nineteenth centuries in Europe,(see Love, 1978), particularly with reference to the JEU De L'OIE, pp. 6-9 and pp. 18-19.) Active interest in documenting the procedure and rendering it a stable technology has been very recent and mainly dependent upon the work of Richard Duke, Fred Goodman, Cathy Greenblat, Ansel Horn, Harold Stolovitch, and most especially Sivasailam Thiagarajan. Of particular relevance to those interested in the newer frame games is the following list:

Amberstone, A., and Amberstone, W.
THE POWER GAME
Armstrong, R. H. R., and Hobson, N.
NEXUS
Coppard, L. C.
POLICYPLAN
Duke, R. D., Becker, H., and Greenblat, C. S.
CONFERENCE GAMES
Duke, R. D., and Greenblat, C. S.
AT-ISSUE
Duke, R. D., and Greenblat, C. S.
IMPASSE
Duke, R. D., and Stenber, N.
GENERAL SYSTEMS GAME
Fennessey, G. M., and Schild, E. O.
INFORMATION
Horn, A.
A GAME FACILITATOR
Horn, A., and Goodman, F. L.
RUMMAGING
Horn, A., and Steinwachs, B.
PIECE OF MIND
Instructional Simulations, Inc.
SYSTEM 1
Klietsch, R. G.
ORACLE-QUEST-ORDER
Tombaugh, R. F., and Davis, J.
PX-190
Twelker, P. A.
CONDUCTING PLANNING EXERCISES

All of these are described in Horn (1976), together with information concerning how they may be obtained. A more recent guide can be found in Horn and Cleaves (1980). For the designer of instruction, the frame game is an extremely potent tool for generating motivating and effecting interactive teaching and learning.

GAME CHAINS

As far as the author is aware, this is the first time the term "Game Chain" is being publicly presented althought the concept is one which has certainly existed and been utilized in the past. (See especially Thiagarajan, 1975). The game chain is precisely what the term suggests: a sequencing of games which are interrelated so that the output of one game becomes the input or starting point for another game, (Figure 19-5).

Game chains can occur in many varieties and do not necessarily have to be linearly related (Figure 19-6).

In some instances, input, in addition to a previous game's results, may be required to initiate activity. Another variation permits an initial game to "set the stage" or build a sensitivity toward an area under study. Thus it is the content and atmosphere of the game, more than its results, that subsequently prime the next game in the chain, (Figure 19-7).

An example of this type of chain dealing with future forecasting will be presented later in this chapter. At this point it is appropriate to turn to the relationship between frame games and game chains and show them how together they can create interactive teaching/learning sessions that may extend over lengthy periods of time, allowing new elements to be added while building upon the old.

FRAME GAMES AND GAME CHAINS

The frame game permits the instructional designer/developer to create rapidly--and with some prior guarantee of success--a learning game that meets the needs of her/his targetted learner group. The GAMEgames, in particular, stress interaction among player-learners. Combined in

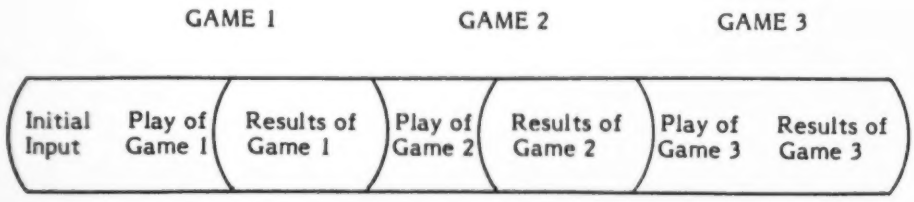

Figure 19-5.

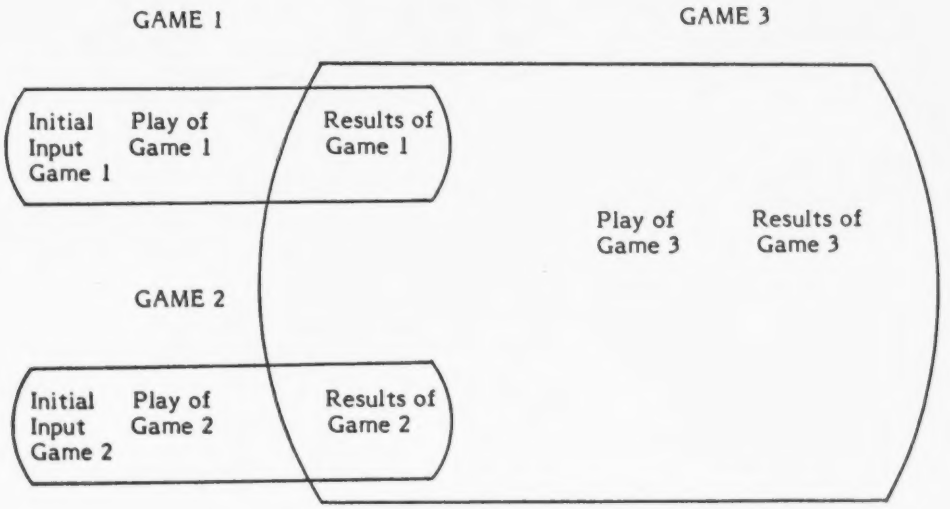

Figure 19-6.

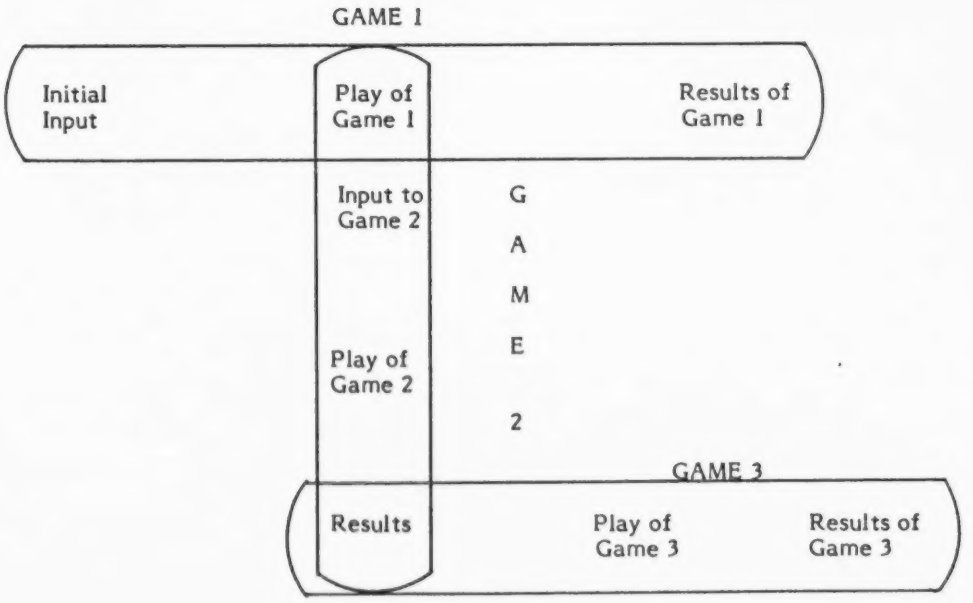

Figure 19-7.

chains, the instructional designer can select suitable frame games and create learning situations which allow learners to constantly build upon what they have achieved in the previous games. Knitting the chains together and directing them so that usable outputs emerge requires skill and management talent upon the part of designers and instructors. But this is true with all instructional materials.

To illustrate how frame games and game chains can be united into a powerful instructional tool, the author presents two illustrations from his own teaching experience. Both examples involve adult learners, but he has also used other game chains with younger learners, as well as with the mentally handicapped. Because of space restrictions, both game chains are presented in resume only. The second of these, however, is extensively described in Stolovitch, 1979.

Community Radio

A class of undergraduate students in communications at the Universite du Quebec a Montreal participated in this series of games. The purpose of the entire exercise was to have students identify communities which were being underserved by metropolitan Montreal's community radio stations, select one or several of these priority underserved groups, come up with a broadcast series for meeting the needs of each of the groups, and actually initiate planning of a viable series.

Game 1 had as its objective to identify high priority communities that are underserved by community radio in Montreal. The NEEDS ANALYSIS GAME frame was selected for this purpose. All participants had already worked in community radio as student interns and were familiar with the subject area. The students were divided into five teams. A simulated memo from the director of programming of a fictitious radio station set the stage for the activity. During the first round of the game, each team identified five underserved groups. When placed upon a common public list (with redundancies removed), the following groups appeared:

1. 18-25 year-old unmarried "cruisers"
2. 16-20 year-old females and males in general
3. Employees of services and companies that deal with the public
4. 15-25 year-old unemployed persons
5. Drunks and vagabonds
6. Homosexuals
7. The physically handicapped
8. Ecology-minded listeners
9. Prisoners
10. Soldiers
11. Persons frequenting "intellectual" cafes
12. Boys and girls 8-12 years old
13. Pet owners
14. Farmers who have moved to the city

By the end of the game consensus formed around three groups who required immediate attention:

1. 18-25 unmarried "cruisers" (those looking to meet unattached females/males for an evening of enjoyment).
2. Persons frequenting "intellectual" cafes.
3. Boys and girls 8-12 years old.

The game lasted 50 minutes from start to finish. Game 2 required the participants to redivide themselves into three new teams, each one concentrating upon one of the priority groups identified in Game 1. Each team was to come up with as many ideas for radio series as they could within a 15 minute time limit. Each idea was placed upon a separate index card. Each group's card was of a different color. Below is an example of what the "Young Cruisers" team came up with:

- Advice and information about veneral diseases
- Drug overdosing, alcoholism, etc. and you
- Clothes and food
- Sports--the inexpensive way
- Careers and professions
- Music and shows
- Travel--inexpensive opportunities

Each team arranged the cards in the order of its preferences and then assigned points upon the back of the card. If there were seven choices (as above), the first choice received seven points, the second, six points, and so on. Teams then mixed up the cards and passed their set to the adjacent team, who now reordered the series of cards according to their considered opinions. Once reordered, they turned over the cards and assigned their points. Only when they turned the cards over did they see the other team's ratings. Once again the cards were shuffled and passed for a third rating. The purpose here was to have everyone examine all suggestions and together in small groups argue and evaluate series ideas, gaining input from everyone, so as to identify a series appealing to all. Here is how the "Young Cruisers" ideas were rated:

-	Advice and information about venereal diseases	7+6+7=20
-	Drug overdosing, alcholism, etc. and you	1+6+6=13
-	Clothes and food	7+3+3=13
-	Sports--the inexpensive way	2+1+1=4
-	Careers and professions	3+5+5=13
-	Music and shows	4+4+4=12
-	Travel--inexpensive opportunities	2+2+5=9

Advice and information about venereal diseases was almost a unanimous first choice. Other first choices were initiation into the cultural world for 8-12 year-olds and information about theatre, music, cinema, exhibitions, cultural events and parties for cafe intellectuals. The game required 40 minutes (including a debriefing) to complete.

The third game had each team from Game 2 take up, in turn, the number one series idea from the other two teams and generate a specific series-

proposal to include:

- The series title
- Number of broadcasts in the series
- Air time for each broadcast including time slot
- Format
- Personnel requirements
- Special features

Teams simultaneously prepared proposals for different series. After 20 minutes, each team prepared a second proposal for a new series. Finally, each team evaluated the two series ideas the other teams presented and rated them, accepting one and rejecting the other with explanation and, if necessary, modification and reservation. Here is how the third game proceeded using the "Young Cruisers" team to illustrate:

1. Young Cruisers team prepares proposal upon "cultural initiation" for 8-12 year olds.
2. Young Cruisers team prepares proposal upon information for cafe intellectuals.
3. Young Cruisers team examines and critically evaluates two proposals other teams have prepared for cruisers upon venereal diseases, accepting, rejecting and modifying.

This game lasted 60 minutes in all.

The fourth and final game was based upon Thiagarajan's PRESS CONFERENCE GAME (Thiagarajan, 1978). Here each individual prepares questions in pre-specified categories about a given topic. Each question is written upon a separate card. All questions are then collected and sorted by categories. Learner-players are randomly divided into as many groups of reporters as there are question categories (usually four). Each group receives all the prepared questions in a given category and arranges, edits and adds or delets from them in preparation for a press conference. Each reporter-group has ten minutes for questions and answers. The group totally controls the question-and-answer period during its turn and can cut off the expert at any time. All of a group's questions deal with one aspect of the overall topic. All reporter-groups listen and take notes about what is being said, even when their own group is not questioning. When all questions have been asked and answered, each team prepares and then reads aloud a communique about the press conference. The expert(s) rate(s) the communiques for accuracy, consensus and how well they have synthesized the information.

In our example, two experts, one from a community radio station and the other from the Canadian Broadcasting Corporation (CBC), fielded questions about submitting programme proposals, preparing for broadcasting a series, broadcasting a series, and evaluating the impact of a radio series during the simulated PRESS CONFERENCE.

Student teams then summarized key points in press communiques. These were judged by the experts in terms of how well and how accurately they reflected what had been stated about the various technical phases of gearing up for and actually running a community radio series. Total time for the game was two hours.

As can be seen from the example, four frame games were used to take the entire student group through the phases of identifying audiences, selecting priority audiences, selecting programming for these audiences, (both series and individual broadcasts), proposing and evaluating series ideas, and examining many of the technical details involved in launching, maintaining and evaluating a community radio broadcast series. Because in real life it is always persons working together who are involved in preparing radio programmes, the interactive formats of the frame games presented highly appropriate vehicles for achieving the objectives. The chain of games permitted a natural build-up of ideas and information. Numerous positive side-effects also emerged from the games:

- Participants relaized that they were favoring audiences with which they themselves were most familiar--a bias to be avoided.
- Constantly plagued with insufficient information, the student players realized the importance of going out and gathering data before launching programme ideas or hypothesizing audience characteristics.
- Shier team members found that they were forced to contribute to team efforts and were participating more.
- Through the game, all students got to work and argue with one another and found they learned a lot about each other.
- Since each team's press communiques were later typed, photocopied, and circulated to all class members, everyone had very complete notes on the expert sessions.
- Several of the students decided to work up their series ideas into real proposals and present them to their station.

All of the students were highly enthusiastic about the game sessions.

Future Forecasting

Stolovitch (1979) describes a series of four activities designed to focus attention upon the future. The first of these, FUTURE HEADLINES, created by Dean Spitzer, directs the attention of participants toward the future. It is an amusing and non-threatening game which draws participants away from their day-to-day concerns and gives them a feel for the future. The results of the game are not reused in later games, but the future orientation that grows throughout FUTURE HEADLINES sets the stage for the next three game activities.

MINI-DELPHI (Stolovitch, 1976) is designed to narrow the focus upon the future to what is likely to occur in a

given field by a given date. Whether the group consists of industrial trainers, elementary-school children, or pipe fitters, the game requires everyone to look to the future and to consider where they are headed.

- AFAR: ALTERNATIVE FUTURE ANALYSIS AND REVIEW (Thiagarajan, 1976) focuses upon desirable futures. This activity tries to answer the question: What would we all like to see happening by the year "X"?
- SCI-FI: STRATEGIES FOR CONCRETIZING IDENTIFIED FUTURE IMAGES (Dormant, 1977) gets participants to consider what they can do to bring about the desirable futures they have indentified (from AFAR) in the light of what is likely to occur (from MINI-DELPHI). It forces individuals and teams to specify actions to be taken **now** that can have a positive impact upon the future.

As with the previous example, all the games are frame games waiting to be loaded with whatever appropriate content the instructional designer wishes.

CONCLUSION

This chapter started out with an explanation of the concept of frame games, providing several examples of the frame-game process applied to instructional settings. It then introduced the newer concept of game chains with some of their possible variations. Finally, frame games and game chains were married in order to demonstrate how together they offer an exciting and effective technology for interactive teaching/learning. Instructional designers, trainers and teachers who seek means for helping their learners attain objectives which require communication, group decision-making, team planning or simple interactive skills should certainly explore this combination design.

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